Information Systems in SAMGrid

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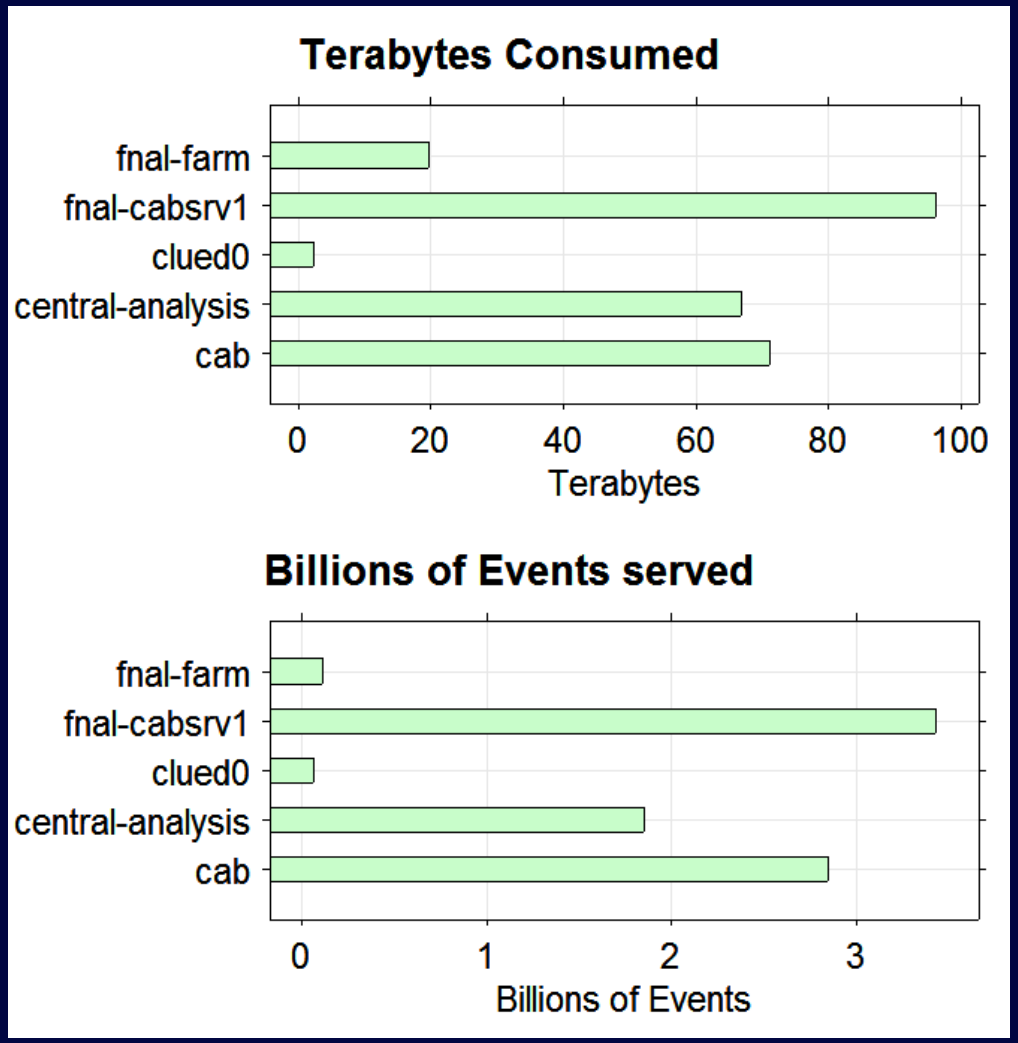
Outline

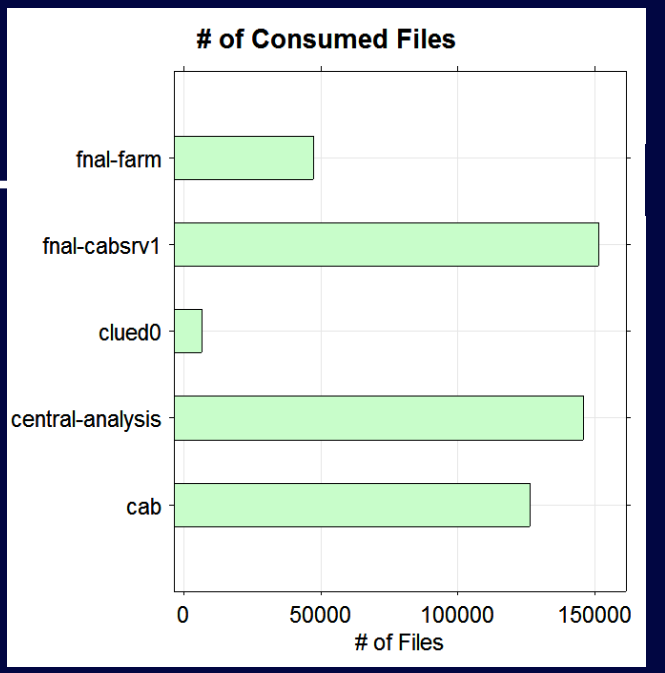
- **Current SAMGrid Monitoring**
- **Future Plans**
- **Connections to outside**

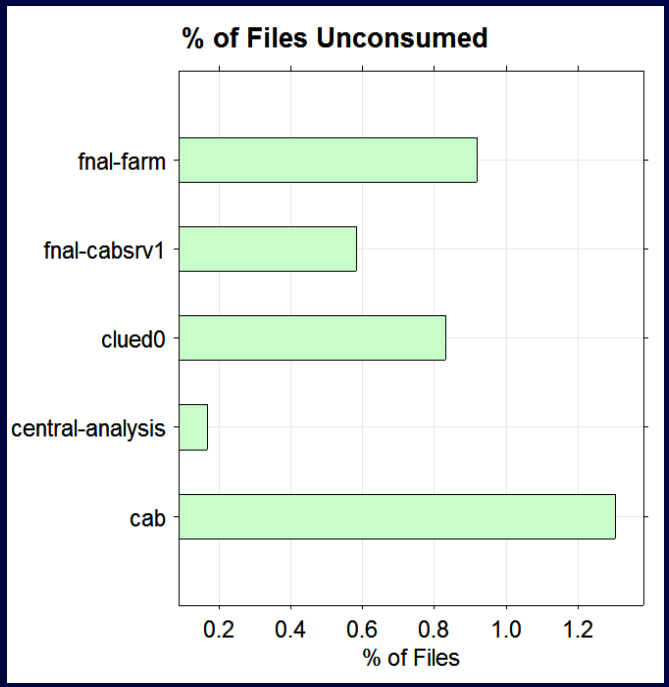
Types of Current SAMGrid Monitoring

- Trouble detection and investigation
  - *Is SAMGrid OK? What's wrong?*
  - Sam-at-a-glance
  - DBS Monitor Plots
  - Text station dumps/logs
  - SamTV
- Internal Efficiency
  - *Has SAMGrid been running well?*
  - SamTV
  - Rate plots
  - SAMGrid Efficiency Plots
- Performance & Public Relations
  - *What has SAMGrid done for the experiment lately?*
  - Rate & Efficiency plots
  - Customized by hand plots
- Users' Monitoring
  - *What is my project doing (why isn't it done)?*
  - SamTV
  - SAMGrid Job Monitoring

Plots made by hand







Observations

- *Monitoring is not "one tool fits all"; rather it's "use the best tool for the job"*
  - *Hard to imagine one tool that can do all of the monitoring we've created*
- *... Because there are different levels of monitoring*
  - *30,000 ft level [Users, stakeholders, funding agencies]*
    - *Have covered some of this, but nothing unified or easy*
  - *User specific level*
    - *Only SAMGrid job monitoring is geared for this*
  - *Low level [shifters and experts]*
    - *This is where we've had the most need, and so it is well covered, but room for improvement*
- *While some monitoring is a no-brainer, knowing what to monitor a priori is not easy*

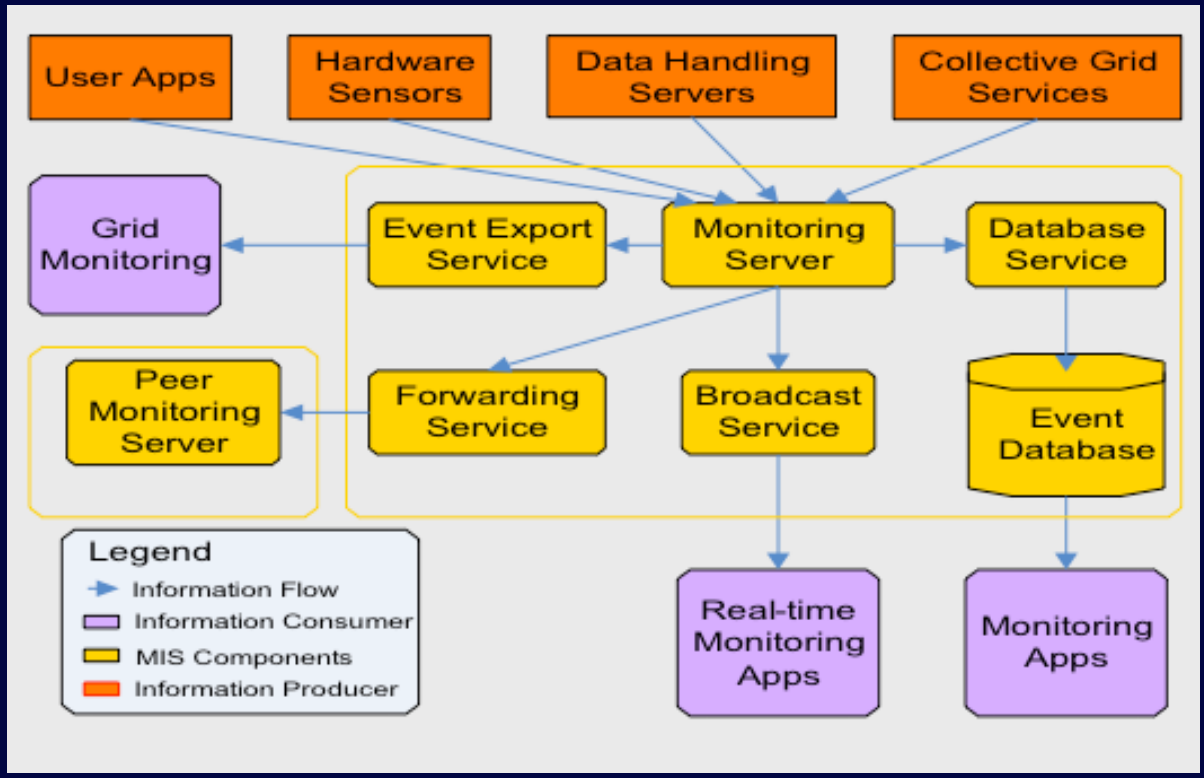
Issues with Current Monitoring

- Gathering the monitoring data
  - Parsing log files [creaky, slow]
  - Trolling the DB [incomplete, difficult]
  - XML DB (for SAMGrid Job Info - easier since they have specific monitoring needs)

- Presenting the data to the user, shifter, expert, stakeholder
  - Often the harder part - again, different people have different needs
  - GNUPlot for the rate plots
  - Java plotting for DBS Monitoring
  - Customized SVG and *R* for SamTV
  - Customized Web pages

Current activities

- We are unifying the "Gather the data" part now
  - "Instrument" SAM DH services & clients so they send events (via CORBA - UDP) to a Monitoring Server



Gathering the data...

- Using technology we already use & know (started ~2 yrs ago)
- Highly extensible and unified (any "source" can be instrumented, all sources talk the same way) - But SAM specific

- Status:
  - Monitoring server infrastructure is written and in use for testing
  - Client is already instrumented
  - Station related services are 95% instrumented

- What to do with the data?
  - Act on it immediately [Push] (send mail, NGOP)
  - Store for future retrieval [Pull]
    - Use a MySQL DB - want it to be simple and fast. Schema is geared for maximal speed in writing (mirrors CORBA dictionary structure).

Presenting the Data

- Sam**HD**TV is in the works
  - Works off of DB instead of log files
  - Summer student put all current functionality of SamTV into SamHDTV (plus some extra stuff)
  - Needs testing and deployment
- Connection to MonALISA has been explored
  - Have a prototype connector
  - More time needs to be spent on determining MonALISA limitations and what exactly we want to display
- Future goals - Initial deployment (we're about a month away)! Displays geared for users, 30,000 feet plots, connection to NGOP, incorporating JIM information

Fitting in with a broader project

- Because SAMGrid has its own services, data gathering instrumentation is SAMGrid specific
- Aside from use of CORBA, monitoring server is **not** SAMGrid specific
  - Could gather info via other mechanisms. Server is built for robustness (minimizes lost monitoring data with zero impact on monitored service)
- We need to monitor SAMGrid specific things
  - So a generic monitoring service is difficult to utilize
  - So a generic monitoring schema is difficult to utilize (GLUE)
  - But there's no reason why we can't export (MonALISA)
  - But these exports will be a subset of our monitoring data

"Information Service"

- Motivation
  - When FNAL DB goes down, SAM DH stops worldwide [service outages]
  - SAM DH Stations must talk to FNAL DB for configuration information [can be slow for far away stations]
- Solution
  - A replacement DB Server (SAM DH specific) that can provide some level of Station autonomy
  - Get the best out of a (excellent) CS graduate student before he graduates in June

Summary

- Monitoring is crucial for success
  - With each improvement in monitoring, SAMGrid has benefited enormously
- But we've learned there's no "one solution for all"
  - Monitoring must meet many disparate needs
  - Monitoring must be present at many disparate levels
- SAMGrid project would be happy to examine monitoring solutions, so long as our stakeholder needs are met

References

- Monitoring:
  - CHEP 2004: 451-SAMGrid Monitoring Service and its Integration with MonALisa
- Information Service:
  - See talk at https://plone3.fnal.gov/SAMGrid/Wiki/SAM_Information Service_SAM_Planning_Meeting-03_31_05.ppt